



Antifouling in the freshwater environment

Closed loop wash down system

Galleon Storage and Mooring, Beccles

Making the environment second nature

Introduction

In the UK, boats are often pressure washed on being hauled out to clean the hull of biofouling. However when pressure washing self-eroding antifouling paints the waste water from wash down may contain antifouling residues which can accumulate around wash down areas. Wash down operations are also affected by the Water Resources Act (1991) which regulates any polluting matter entering controlled waters. To prevent contaminated wash off water entering the waters a closed loop system can be installed, this can recycle the wash down water reducing the amount of water used.

One closed loop system has been trialled in the Norfolk Broads supported by the Sustainable Development Fund. The Sustainable Development Fund (SDF) is a Government initiative. It is shared by the National Park family in England, which includes the Broads Authority, and by the three National Parks in Wales and some Areas of Outstanding Natural Beauty (AONBs). In England it is funded by Defra.

SDF's purpose is to promote sustainable development and social inclusion within these special areas. To date we in the Broads have supported over 100 projects with grants totalling £850,000. Just over one third of these are boating related.

The system



Galleon Storage & Mooring is a new, state of the art boatyard situated on the River Waveney at Beccles in the Southern Broads. It is one of the most environmentally friendly boatyards in the Broads and the first to offer 'dry stack' storage (photo). The yard has a policy of positively discouraging the use of antifouling, which as well as reducing environmental impacts, introduces potential cost benefits for boat owners, namely savings in labour and materials, and increased re-sale values.

To improve its environmental performance even more, Galleon Storage & Mooring decided to purchase a WashTek filtration system from US manufacturers Centek and applied to the Broads Authority SDF for the funds to do so. A grant of £12,500 was approved and an integrated wash down facility was installed in late 2006.



Galleon Storage & Mooring's WashTek installation is the first of its kind in Europe; it is therefore a prototype in terms of its application. Galleon's is a mobile system but there is a fixed version too, with the principle being the same.

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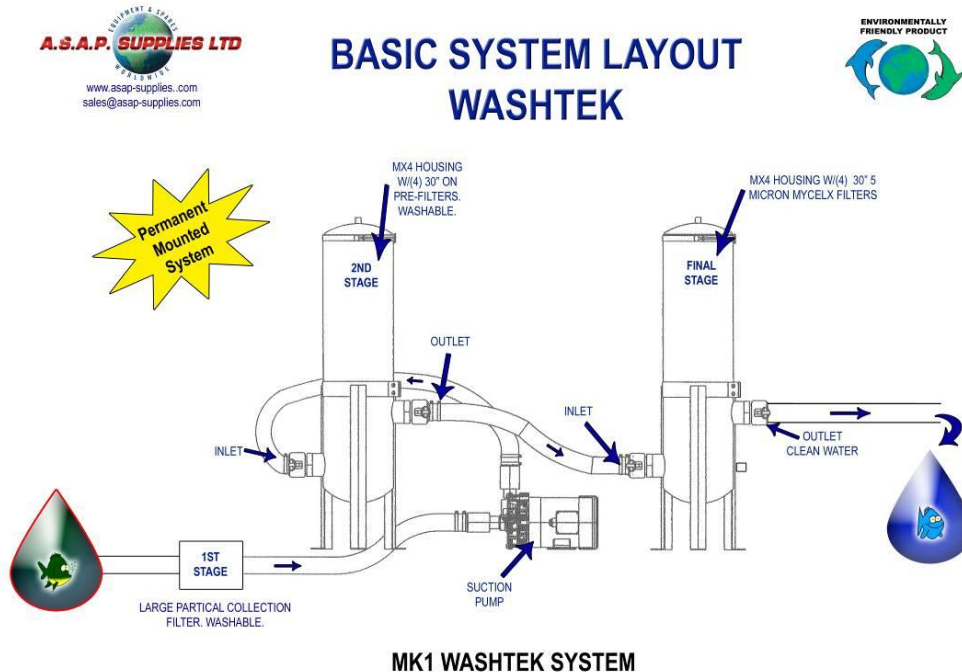
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In simple terms it is a three stage filtration process. Stage 1 removes large particles such as paint flakes and debris and Stage 2, in the cylinder on the left, removes particles as small as 5 microns. The Stage 1 and 2 filters are removable and washable.

The schematic layout shown below is of basic static system. The water is sucked up from the collection sump located close to the boat wash down area. The wash down residue is then passed through a 3 stage filtration system before its final discharge.



MK1 WASHTEK SYSTEM

Stage 1 - The large practical filter is designed to remove the large debris like paint flakes & our large objects which appear in the drainage system during wash down. The filter has a clear lid for visual inspection and allows for the operator to quickly remove the basket for cleaning. This also prevents objects causing possible damage to the suction pump. The suction pump can be tailored to suit the final system requirements.

Stage 2 - The MX4 Stainless Steel housing contains 4 x 30" Vertical elements which can be removed for cleaning. This filtration stage removes particles down to 5 Microns

Stage 3 - Another MX4 Stainless Steel housing and is the final polishing process which contains 4 x 30" 8-RMX Centek- Mycelx patented & treated elements. These have the capacity to remove up 9 Kilos of polluted material in this the final filtration stage. (Please bear in mind that this does not sound a lot but it is made up particles smaller than 5 Micron in size)

In the second cylinder there are five Centek-Mycelx MX4 cartridges. These absorb the smallest particles and dissolved materials. The cartridges can absorb a total of 9 kg of contaminants before they have to be disposed of at a special landfill site.

In operation

The technique that Galleon Storage & Mooring employs is very simple. The boat concerned is lifted from the water by a Wiggins Lift and then transported to a specially constructed wash bay. The hull is then pressure washed and the wash water collected in a holding tank. Once

it has settled the water is pumped to the WashTek filtration system for processing before being returned to the river.



It was a condition of the SDF funding that some simple 'before and after' testing of the wash water be carried out to find out how effective the WashTek equipment was in removing metals such as the zinc and copper that are commonly found in antifouling paints. Although it was only a one off test carried out under field conditions, and the wash water from only one boat was processed and tested, the results were encouraging. The concentrations of metals in the wash water were significantly reduced after they had passed through the WashTek system.

The Centek-Mycelx process can remove up to 99% of hydrocarbons from bilge water but it is not as efficient in removing dissolved metals from hull wash water. This is something Centek is currently working on to improve the system's performance. In the meantime the Broads Authority have satisfied ourselves that the installation we funded does work and that the wash water that Galleon Storage & Mooring is returning to the River Waveney is a good deal cleaner than it would otherwise have been.

Although the WashTek system at Beccles is still the only one of its kind in Europe it is not the only means of removing contaminants from hull wash water. There are other techniques available - some sophisticated, some not - several of which, like WashTek, are being further refined in the light of operational experience. Brief details of some of these are available in The Green Blue factsheet about closed loop wash down systems available to download from the website.

The use of antifouling in freshwater environments can pose significant problems. The Broads Authority would like to see these addressed and their Sustainable Development Fund is prepared to consider funding further research into cost effective and sustainable ways of removing antifouling residues from the Broads and other sensitive waterways.

More information

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For details of the Broads Authority SDF and its projects please go to:
www.broads-authority.gov.uk/authority/what-we-do/sustainable-development-fund.html

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